Followup to HCAL Atlanta Workfest

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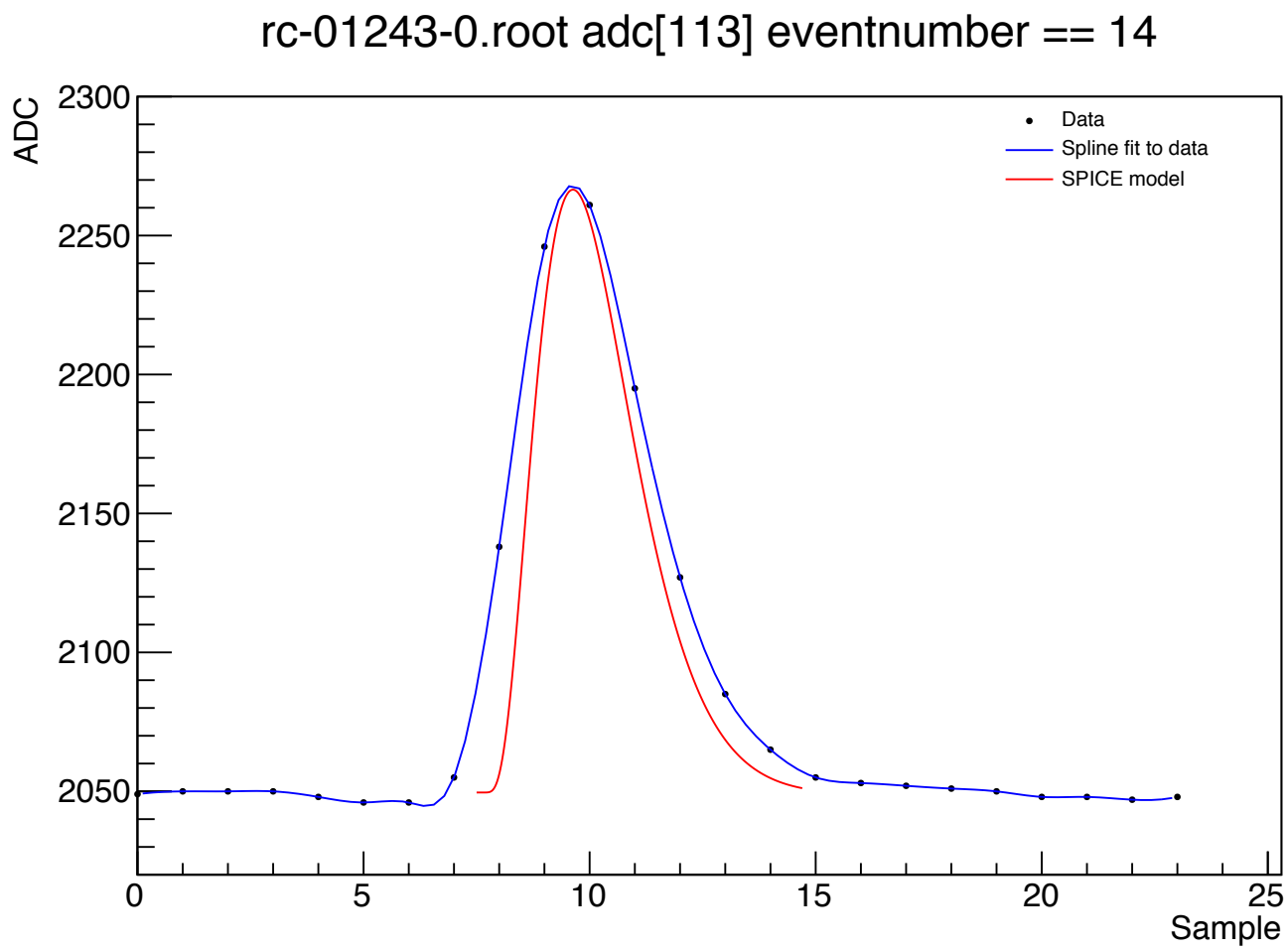
Predicted pulse shape

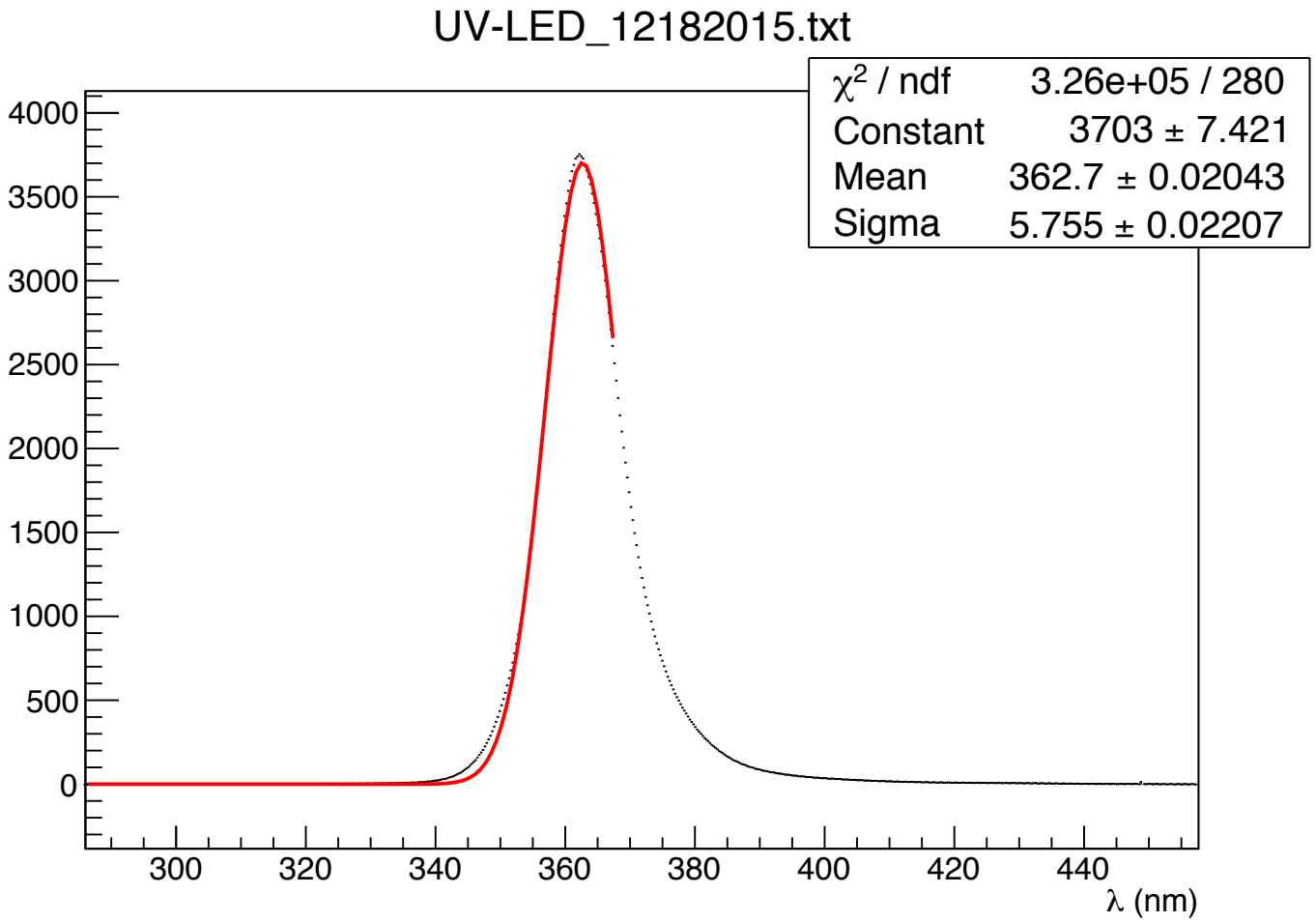
- I was curious to compare the predicted pulse shape from the preamp from Steve Boose's SPICE model of the amplifier and SiPM with the measured pulse shape with the HBD digitzer
- I didn't exhaustively study it, but I scaled Steve's model to one pulse to get the general features (next slide)
- The model reproduces the pulse shape fairly well, but the model doesn't include the cable and front end, and so I think the rise time and decay time are a little slower than the amplifier alone


rc-01243-0.root adc[113] eventnumber == 14
ADC
2300
2250
2200
2150
2100
2050
0
5
10
15
20
25
Sample
Data
Spline fit to data
SPICE model

PHENIX

UV LED's

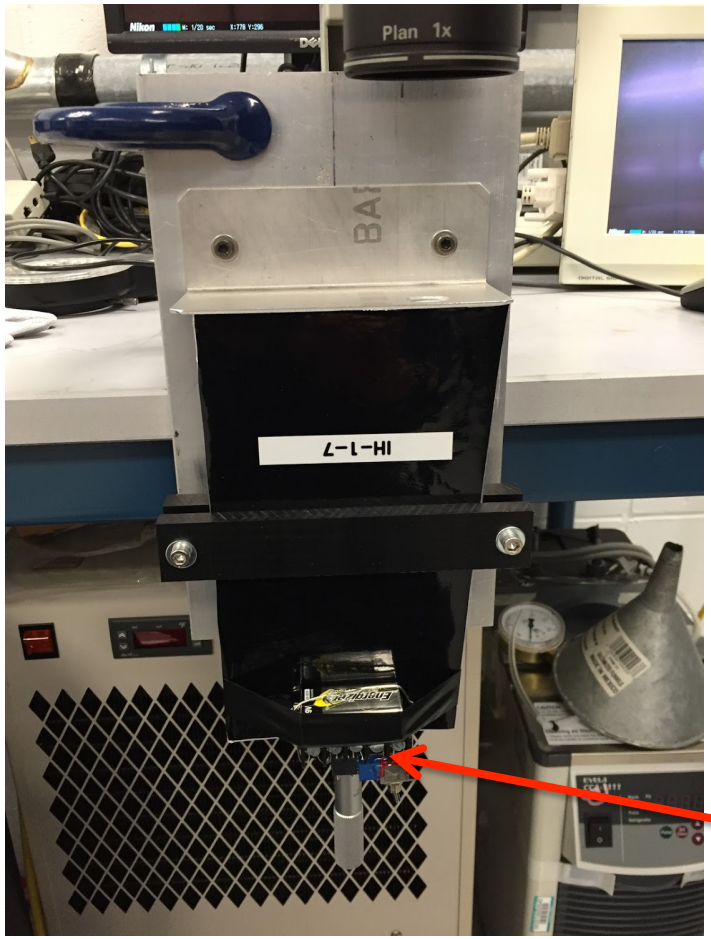
- I got some of the UV LED's that Ron found while we were there—L5-0-U5TH15-1 ($3.79)
- Sean measured the emission spectrum for me (next slide)
- Has some high-side tail, but it does indeed peak at around 360 nm (Sean says there could be some uncertainty in the wavelength at the few nm level)
- I put 5 of these in the mail to Ron


UV-LED_12182015.txt
χ² / ndf 3.26e+05 / 280
Constant 3703 ± 7.421
Mean 362.7 ± 0.02043
Sigma 5.755 ± 0.02207
4000
3500
3000
2500
2000
1500
1000
500
0
300
320
340
360
380
400
420
440
λ (nm)

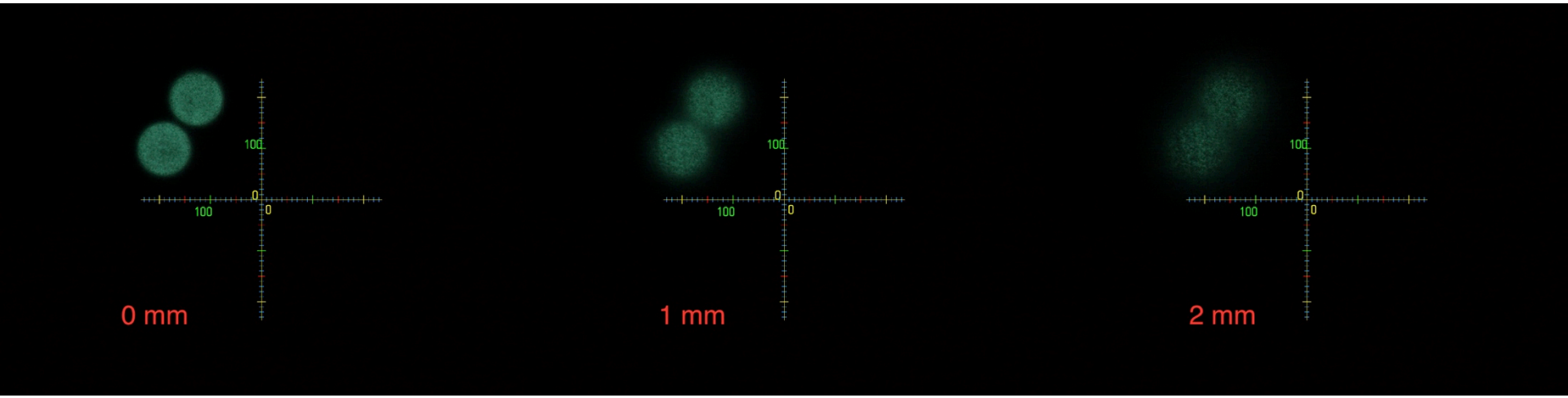
PHENIX

Image plane

- I changed the illumination of the tile from the Maglite to the UV LED
- Sean pointed out that the SiPM's have a 0.3 mm window, so when the fiber is 0.7 mm from the SiPM, the photodetector is 1.0 mm from the fiber
- The images are all 1/10 sec exposures of the image on the translucent screen
- I now understand what Craig was suggesting, that we blast the tile with light and see how many pixels we are really lighting up



PHENIX



December 18, 2015

PHENIX

SiPM holders and boards

- Mike showed me that John T. had SiPM holders on many, many wrapped tiles
- They were missing SiPM boards, so I got 25 matched SiPM's from Sean and gave them to Sal (I took one to try with the HCAL controller, but I can give it back
- He'll finish up Monday, they are now only missing the gray wires
- How long should the wires be? Somewhere between 2" and 6"… TBD